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From the Fourth Annual Report of the State Board of Health of Wisconsin.

OUR PUBLIC SCHOOLS

IN THEIR RELATIONS TO THE HEALTH OF PUPILS.

By J. T. REEVE, M. D.,

OF APPLETON.

DAVID ATWOOD, State Printer.



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To educate her children is recognized by the state of Wisconsin as one of her primal duties. Engrafted into her constitution is a mandatory provision for the establishment of free public schools of uniform character. Ample legislation has given life to this wise provision, and as a result we enjoy the benefits of an educational system that, as our citizens take pride in believing, ranks among the foremost in the nation.

But though 300,000 of the children of the state avail themselves of the ample school facilities which have been provided, and though sixty-seven per cent of the entire population of school age is in school, this has not been deemed sufficient. Public sentiment holds firmly to a conviction that ignorance is subversive of free government and promotive of crime, and that sentiment has been crystallized into a law which makes attendance at school compulsory. In all this we see not the bestowal of a charity, but a far-reaching public policy, adopted to the end that there may be trained up men and women who shall be intelligent to understand, and efficient to rule the affairs of the commonwealth.

The state then having assumed this guardianship of her children for reasons looking to her own self-preservation, it is fitting to inquire what is involved in the relationship she thus enforces, and how well and wisely she performs her self imposed duties. To secure intelligence is not *all* that is needed. "It is a deep, broad and high concern of society," says Dr. Hunt, "whether the boys and

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girls who crowd to the school house door, and are seated in the school room for a period reaching over ten or twelve years, are there to find those aids to physical health to which they are entitled by nature, and which involve so much as to the effectiveness of their future citizenship."

During the years in which this relationship exists, under the laws of our state, the physical system of the child is undergoing its greatest changes, is making its most rapid growth, and is most susceptible to the influence of external surroundings. It is during this period, moreover, that hereditary tendencies may be with most certainty eradicated or developed, and when very often the foundations of all future good or ill health are laid. The physical organization, then, demands at this time special care and watchfulness, for, if it be not now properly developed, the chances are very great that it never will be, and that permanent invalidism will follow. Simultaneously with this physical development the intellectual nature of the child is also developing, and it is of the utmost importance both to the individual and the state, that this development be symmetrical and harmonious, and that both physical and mental shall be so wisely dealt with as to lead into healthful and vigorous maturity. It is feared that these facts are not infrequently forgotten, and that the mental faculties are too exclusively cultivated to the irreparable injury of the child, and it here becomes the province of the sanitarian to call attention to this wrongful treatment of the composite nature of childhood, and to declare that useful citizenship demands that education be not secured at the expense of physical development. Except in rare cases it need not do so; but if during childhood a high degree of scholastic attainment cannot be reached without imperiling the physical welfare, the interests of both state and individual demand that the former give way before the imperious necessities of the latter, for uneducated health can win bread, where education without health is powerless.

In view of these facts, it would seem that the physiological laws that govern the growth and action of the human system should be thoroughly comprehended, especially by teachers and school officers, and that the study of physiology and hygiene should form an essential part of the course pursued in all our public

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schools; yet as the result of an investigation, made by direction of the State Board of Health, into the extent to which these studies actually are pursued in those institutions, we find that very seldom is any place systematically provided for either in the school curriculum, and that in 5,197 out of a total of 5,361 school districts in the state (exclusive of independent cities), no text books upon these subjects are in use. The inquiry further reveals the fact that no knowledge of these branches or of the structure of the human body is required as a necessary antecedent to enable a teacher to obtain the third grade certificate, which is held by seven-eighths of all the instructors in the public schools of Wisconsin.

That this ignoring of a study which is certainly among the most useful of all studies, is not in accordance with the dictates of wisdom and prudence, will, we think, be evident to one who attentively examines the sanitary condition of our public schools, and those who attend them. Ample proof of this position is to be found in the full and intelligent responses to a circular of inquiry, which have laid before us facts concerning a large number of Wisconsin schools, in their relation to the health of students, some of which we purpose to present in this paper. The reports upon which the statements herein made are based, coming as they do from nearly every county in the state, are believed to embody faithful portraiture of all, and to furnish the best evidence of the fact that the physical requirements of student life are too generally ignored, and of the need which exists for bringing the hygiene of school life into greater prominence in every grade of public teaching.

From a careful study of these reports, it is manifest that whatever of mental discipline is obtained in our public schools, and that this is much and great, we have no disposition to deny or doubt, is obtained under circumstances and discipline which *needlessly* imperil the physical health and at the risk of impairing that balance of the physical and intellectual faculties on which alone an efficient manhood or womanhood can be upreared. Only through ignorance of the physical requirements of child life and of the now well established doctrines of sanitary science, can public school officers and teachers permit so many grave mistakes to enter into their dealings with children, during the period when the

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state, having assumed the duty of their education, should see that its own wise purposes are not defeated in the process, and its very life-blood enfeebled by the physical degeneracy of the rising generation.

SCHOOL AGE.

At the outset of an inquiry into the conditions under which an education is secured in the school house, and under the school laws of the state, we are met by the fact that a great physiological law is violated by the admission of children into the public schools at an age when the chief concern should be, not the mental discipline of the school room, but the physical development of the child. That provision of the state constitution which, without reservation or qualification of any kind, admits pupils into the public schools at the age of four years, must therefore be regarded as an unwise one.*

No statistics are available to show how many children of this minimum age are in our public schools, but that the number is very large none will probably question, and that a considerable number are admitted even younger than this, appears from the official records. Nearly six hundred were thus reported last year as "under four years of age." From the only data at hand it is believed that more than one-sixth of the whole number of children in our public schools have not yet reached their seventh year.

SCHOOL ROOM STUNTING

is the expressive title of a paper read before the American Public Health Association,† and there is room for more than question, whether the early confinement of children in school rooms and to school tasks, is not stunting their growth and strength, both mental and physical.

Dr. Newell well says that "however good the sanitary condition of a school, however well it may be lighted, warmed and ventilated,

* This minimum age is also legalized in the states of Connecticut, Maine, New Hampshire and Oregon, and in the territories of Montana, Utah and Washington. In all other state and territories, the minimum school age is either five or six years.

† By Dr. A. N. Bell, editor of the *Sanitarian*, a journal that has done good service in the cause of School Hygiene.

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the usual period of confinement for young, growing, elastic children is in direct violation of the teachings of nature and of physiological laws." In the present method of conducting our public schools, comparatively little allowance is, or can be, made for the age of the pupils; the youngest, in many cases, are compelled to spend nearly as many hours in the school-room as the eldest, if not in actual study, in constrained, and to them unnatural and unhealthful, quietude. In the country or ungraded schools, where pupils of all ages occupy the same apartment, there must, for the sake of discipline, be maintained a semblance at least of attention, and a stillness more painful for the child to endure than prolonged labor can be to those of maturer growth. In the graded schools another danger exists; from every quarter comes the cry of over-crowded primary departments, for the relief of which the temptation becomes irresistible to urge pupils on as rapidly as is at all possible to such degree of advancement as will permit their passage to higher grades. In neither class is there, or can there be, without a radical change in the management of our public schools, "that adjustment of work and play, that variety in position," demanded by the physical nature of young children for the rightful development of body and of mind.

Neither teachers or school officers are wholly to blame in this matter. The law prescribes the age at which children shall be admitted to the schools, and an unwise public sentiment in too many cases demands the utmost that the law permits. There is great need of a revolution in this public sentiment, lest these plants of tenderest growth be crushed by the very weight of misguided care bestowed upon them during the period when the chief energies of the system should be given to the laying up of a reserve fund of strength, which may be drawn upon in after years.

The popular belief that there is any real gain in intellectual development by such early application, is not sustained by facts. We were recently strongly impressed by the forcible way in which a physician, whom in former years we had known as an observing and successful teacher, testified that children who entered school at eight, without any previous mental discipline, were speedily found to equal, and in many cases outstrip, in intellectual attain-

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ments those who had entered at the age of four or five. And an examination of the opinions of those whose opinions are of greatest worth, will show substantial agreement with this testimony. We should be glad to quote the evidence of many on this point, but, having space for only a small part of all in our possession, prefer giving some of that which has been communicated to us in personal correspondence, by some of the most eminent and observing teachers in the state.

Says Hon. W. H. Chandler, of Sun Prairie: "In my judgment, six years is the minimum age at which a child can profitably begin the course of study usually prescribed for the lowest grade of pupils in our Wisconsin schools. A child beginning that course at four years has no practical advantage over and is no further advanced at the age of ten or twelve than one beginning his school life two or three years later.

"I am most thoroughly convinced that by the exposure of children too young to exercise any discretion, in sending them to school, by the criminal and barbarous methods, or rather defiance of common sense in arrangements for heating and ventilation, for water supply and for obedience to the calls of nature, their health, physical and moral, is to an alarming extent, and to a disastrous degree, affected. And for this, the ignorance of teachers of the laws of health, of the nature and causes of disease, or their thoughtless neglect in using what they do know, is largely responsible."

Prof. Robt. Graham, of Oshkosh, writes:

"From six to eight years is the earliest age at which scholars should be admitted to our public schools. My observation leads me to the conclusion that to begin at an earlier age is detrimental to the best mental development as well as physical."

Prof. Samuel Shaw, of Madison, says:

"Taking the schools as now handled, from six to eight years old is young enough for children to enter them. I do not think that the child entered at four has any advantage over the one coming from six to eight, if both remain in school until from twelve to fourteen."

From a communication from Prof. I. N. Stewart, of Berlin, we

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make the following extracts: "It is my firm opinion that children should not enter school before they are six years old, even with our present course of study, which is brought to as low a standard as possible. I believe that good healthy children, entering school at six or seven, will outstrip those entering younger; they certainly will if not held back by the slow movements of those whose natural vivacity has been dulled by two years of useless drill and confinement. The fact is that a child recovers very slowly, if at all, from the apathy acquired in those earlier years in striving to learn something beyond his powers; he has been deprived of his natural playtime and feels that school and study alike are impositions — a feeling which it takes years to overcome.

Prof. C. W. Roby, of La Crosse, in a personal letter, reiterates his opinion published in the annual report of the Department of Public Instruction of that city for the year 1877: "After much observation, I am fully persuaded that, unless a system of Kindergarten instruction can be maintained, all children under six years of age might be profitably excluded from the public schools. Experience shows that the child who enters school at six is generally as far advanced at ten as the one who enters at an earlier age."

Many other experienced teachers and school superintendents have written to us in equally emphatic terms, but space forbids further quotations.

The question of what shall be done with these little ones of from four to seven years of age is not one for discussion in this paper. If it be admitted that the public schools, *as at present conducted*, where class system and discipline can make little allowance for age and feebleness, is not adapted to their needs, it is possible that such changes may be introduced into them, or such special provision made, as will meet the admitted need; this may be done at least in the larger villages and cities, while in the country the question will, to a great extent, take care of itself. The more general and systematic introduction of a proper system of light gymnastics and physical exercise would be a movement in the right direction, and wherever practicable, some such system should be adopted in all schools where young children are congregated. What we plead for is a better recognition of child nature, and such mod-

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ification of existing conditions as will make school life consistent with the physiological demands of the child. If the little ones must be sent to school, they should have the wisest and best of teachers, and oral instruction and object lessons should have a larger place in their courses of instruction. As a long step toward this order of things, we welcome the prospect that Kindergartens may be established in connection with our institutions for the training of teachers—the state normal schools.*

With all the testimony that has been offered there is left no room for reasonable doubt, that if seven years were the minimum school age,† if intermissions were more frequent and physical education more common and systematic, the child of eleven or twelve years would equal in intellectual attainment him who entered school at four, while the improvement in physical health would be so decided, and the zest for study so greatly increased, that the succeeding years of school-life would show yet more strongly marked advancement.

But danger lies not wholly in the premature admission of children to school. In the hot haste to secure early results, the immature brain of childhood is frequently subjected all through the school course to a strain which exceeds its powers of endurance.

Dr. Whiting, in the president's address, delivered before the Wisconsin State Medical Society in 1876, says: "In the laudable ambition as to which school shall stand highest on the record in class-work and general scholarship, the fact that there is a limit to the mental and physical endurance of children seems to be lost sight of. Pupils are pushed forward in their work till it is utterly impossible for the average capacity to endure the stress, and

*Vide Journal of Education for September, 1879.

† The State Medical Society of Rhode Island in 1874, unanimously adopted resolutions on the subject of School Hygiene, which embrace the following: That physical culture should be made a part of our school system; that the Kindergarten system should be engrafted in to our public schools; that no child under 7 years old should be admitted into our schools as now conducted; that under 12 years of age, three hours per day, and over that age four hours, is sufficiently long for confinement to mental culture. (HUTCHINS.)

"The New York Medico-Legal Society, which is composed of the best talent of the professions of law and medicine, and organized for the purpose of instructing the public upon hygienic subjects and correcting hygienic abuses, fixes the time of beginning school at 8 years, and would make the maximum length of attendance three hours daily for primary pupils."

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many of them become depressed and disheartened and fall out of their classes. * * * * * The truth is, we are trying to do too many things in our schools, and our children are pushed onward into higher branches of study before their natural intellectual development warrants it. If you doubt this, I ask you to visit some school of the intermediate grade, where boys and girls of ten and twelve years old are taught, and, if the recitation chances to be in arithmetic, if you do not find these boys and girls struggling with the analysis of problems that will baffle three out of five of you, your experience will differ from mine. If the lesson be in geography, then I think you will be amazed not that some fail, but that so many have memorized the text of the author, and are able to pronounce the stilted, and to *them* meaningless words often employed in discription."

As applied to a very considerable proportion of our public schools. this is by no means an overdrawn statement. The power of fixing attention or of concentrating thought is, with children, limited; we commend to teachers an examination of the opinions of careful and competent observers as to what its limits may be, but without here attempting to define them, we may safely assert that their utmost bounds are daily transgressed in many schools, and that tasks are required which are wholly disproportionate to the age or capacities of the pupils. Proofs of this statement may be drawn in abundance from the testimony of observing physicians, and from the too-often unnoticed but convincing evidence given by the irritable temper, the disturbed sleep, the frequent headache, and the fitful appetite, which betoken the broken health of pupils, partially and temporarily remedied by frequent and sometimes prolonged withdrawal from school.

We are aware that some teachers claim that it is only exceedingly rare cases that children are injured by the amount of study required from them, and that they are frequently under better sanitary conditions in the school room than they can be out of it. In so far as this latter claim is true, it is the normal condition of things. It should be true of all schools, for a due amount of study is as essential to a harmonious and efficient development as a due amount of play and labor; but there are very many schools of which

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it is not true, and in very many schools, throughout the whole period of student life; the methods and hours of study need, more than they receive, careful adjustment to the varying capacity of the pupil. Recreation and exercise should be regarded neither as wasted time, nor yet as "mere relief from mental toil," but as necessary ministers to intellectual culture. "Recreation is, *or ought to be*," says Mr. Romanes,* "not a pastime entered into for the sake of the pleasure which it affords, but an act of duty undertaken for the sake of the subsequent power which it generates, and the subsequent profit which it insures."

These are words of sound wisdom, which every worker in the busy hive of life may well heed; they are of special value to those who have the care of the mental culture of youth. We commend them to the consideration of every teacher in the land, for teachers need to know, for themselves and for their pupils, the limits beyond which it is not possible for mental labor to be carried with profit. "School work is brain work," and that of an exhausting kind, and an exhausted brain can no more work efficiently than can an exhausted body. "A broken leg," says Dr. Beard, "one can see and touch and handle, but an exhausted brain, oftentimes a far more serious matter, is passed by, and even its existence is doubted."

It is not inappropriate here to ask the question, if in some public schools a mistake is not being made as to the *proper* end and aim of a *common school education*. "The public school, in all its departments," says Prof. Newell, "must be regarded as the turnpike road from which the travelers may step at once into the farm and workshop." Are we not rather regarding it as "the vestibule merely, to the high school, which in its turn is the ante-chamber to the college?" Edward Everett, in speaking of education, said:

* Popular Science Monthly. Since this paper was written we find in the Sanitary Record of London, an able article on School Sanitation, by Edwin Chadwick, C. B., in which he claims credit for the introduction of the half-time school principle and the introduction of physical exercises in the time thus saved from sedentary desk work, of which he says, that "the general result of the combined mental and bodily training on the half-school time principle, is to give to two of such children the efficiency of three for productive occupations." These words may possibly be regarded as those of an enthusiast and as inapplicable to our American schools, but they add force, nevertheless, to what has been said above.

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“To read the English language well, to write with despatch a neat, legible hand, to be master of the first four rules of arithmetic, so as to dispose with accuracy and at once of every question of figures which comes up in practice,—I call this a good education. And if you add the ability to write pure grammatical English, I regard it as an excellent education. These are the tools; you can do much with them, but you are helpless without them. They are the foundation, and unless you begin with these, not with flashy attainments, a little geology and other ologies and ophies are ostentatious rubbish.” It is because the school has departed from this ideal, and is prematurely reaching after the higher branches of education before time has been given for the thorough mastery of the lower, and before the brain of the child is competent to thoroughly understand them, that the charge of overwork and mental strain becomes a valid one.

NUMBER OF STUDIES, AND TIME REQUIRED FOR THEM.

We have already spoken of the limits of a child's capacity for brain work. Whatever estimate may be put upon it, it is manifest that it must be far below that of the mature man; yet the number of separate studies given to young children in many schools, and the brain labor required to grasp them, are greater than can wisely be meted out to those much more mature in years.

Abundant confirmation of the statement just made is found in the reports lying before us. Turning to them for answers to the question concerning the proportion of pupils who are required to study out of school hours, the time required by the average pupil for the preparation of the work demanded, and the largest number of studies pursued by any one pupil, and while there are many who report, in substance, that not more than three or four studies, with one or two general exercises in addition, are permitted, and that advanced students only are required to study out of school, and they generally not more than one or two hours, it is nevertheless true that there are a very much larger number who report a number of studies, and an amount of labor required to master them, which must be considered as beyond the successful grasp of any except those of brightest capacity.

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Thus, in examining the reports with reference to the time required by the average student to prepare the daily work, we have the following replies, selected as representative of a very large number: "For preparation of average work from three to ten hours is required, and one fifth of the students need to study out of school hours." "All study out of school hours; average student needs from six to eight hours to prepare the required work." "About one-half are obliged to study out of school hours; an average student needs from six to seven hours to prepare work." "Proper preparation of work will require the time during school hours, (six hours with two intermissions of fifteen minutes each), with a small proportion of outside time, probably *not exceeding four or five hours.*" "Five or six hours of *solid work* will prepare the amount of work required." "Two-thirds of the pupils study out of school." This last answer being given in many instances.

Quotations might be greatly multiplied, but the above will suffice for illustration. A few have considered it necessary to explain or apologize for the excessive number of studies or the excessive amount of work required, in such ways as the following: "The number of studies is too great, but the teacher is compelled to conform to the wishes and prejudices of parents and pupils." "Few are obliged to study out of school, but the majority do so in deference to the wishes of parents."*

Taking up next a large number of reports, selected with a view to securing a fair representation from several parts of the state, and including both city and country schools, and examining them with reference to the number of studies pursued, we obtain the following statement:

Largest number of studies pursued by any one pupil..	2	3	4	5	6	7	8	9	10	12
Number of schools reporting the above numbers of studies.....	1	7	45	130	173	92	49	16	8	2

From which it will be seen, that out of five hundred and twenty-three reports examined with reference to this one question, in one

*Parents are legally the ultimate judges as to what may be required from their children.

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hundred and sixty-seven, or very nearly one-third of the whole number of schools embraced in the above table, some scholars are permitted, if not required, to undertake seven or more studies at the same time — probably not to recite in all upon the same day, though in no one instance is it so reported.

We find a general uniformity of result in several series of reports, aggregating one hundred and seventy-eight, which were examined at different times with the object of obtaining a fair representation of opinion upon the question whether the work done in the schools is productive of injury in any cases. Out of the above number one hundred and twenty-two declare that no more than six studies is permitted to any one pupil at the same time, and, of this latter number, thirty-seven, or *thirty per cent.*, admit that some students are injured by excessive study and the necessary close confinement to the school-room — while of the remaining fifty-six, who permit or require from seven to twelve studies at once, seven only, or *twelve and one-half per cent.*, are found who will admit such danger, the ratio diminishing as the number of studies increases. Comment upon such statements is needless; they carry their own lesson of criticism upon the judgment of those who thus report.

It is not known to the writer whether composition or declamation are generally included in these studies or not. In the only cases where they are specifically referred to in the reports, they are not included; but it should be remembered that however simple the compositions of childhood may appear to adults, they are often the product of exhausting brain labor. In very few cases is it known, either, how many of the “studies” are classed by some teachers as “general exercises,” requiring no concentration of thought except during the time the exercise is being conducted. In many reports, in which the lower numbers of studies are given, it is added that there are one, two or three “general exercises in addition,” and it is to be presumed that these are included in those which mention the higher numbers. Making, however, the most liberal allowance for all such cases, the fact remains, that so great a variety of study can have but one out of two effects; that they either overtax the brain or produce a mental dissipation; an attempt to pursue too many studies, resulting in the thorough comprehen-

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sion of none, and in losing, to a great extent, the benefit of all ending, if continued too long, in an enfeebled and illy balanced intellect. Dr. B. W. Richardson says: "I believe it will be found, without exception, that men with one idea have been over-pressed children, who, finding it impossible to take in all that was tried to be driven into them, contented themselves at last with one object, and were lost to everything else."

Dr. Kempster, in a recent address on mental hygiene, says: "The discursive method employed of introducing a half-dozen subjects at once to the opening intellect of a growing child, is injurious because he cannot grasp them. * * * I give it as my opinion that immense harm is coming upon the brains of the children of this land by the hot-bed system of forcing education."

In an address delivered before the State Teachers' Association some five years ago, Dr. J. Hobbins, after entering a plea for shorter school hours, in which he proposed to divide all the pupils in the public schools into two classes, the one to contain those under twelve years, the other those over that age, allowing not more than four hours *per diem* in school to the latter class, and three hours to the former, advised that the number of lessons and exercises be diminished because the tension of mind and the intellectual excitement needed to accomplish so large an amount of work are incompatible with health.

Dr. J. C. Reeve, formerly of this state, now of Dayton, Ohio, in a lecture on the Brain and Nervous System, after asserting that physiology teaches that children should not begin their school life at an earlier age than eight years, and declaring his belief that confinement in the school room for six hours per day is too much for any child under twelve years old, proceeds: "Ask young men at college; ask professional men how much six hours' good, mental labor lacks of being a full day's work, and with all the extenuations that can be urged, I think that you will find that schools approach pretty nearly to requiring of children below twelve the work of full grown men."

Such warnings as these should be heeded; they are the deliberate judgments of men entitled to the highest confidence; yet through

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ignorance of the capacity of endurance in the intellect of childhood there are very many cases in which, when a child fails to perform the set task in the required time through sheer inability to do so, there is meted out punishment in a form for which there can very seldom be any apology; we refer to the common custom of detaining the pupil in the school room and at work during recess, or after school hours. Such punishment is in direct opposition to all principles of school sanitation. Mr. Romanes says: "To shut up a child already weary with work in an empty school room under a depressing sense of disgrace, is something worse than cruel: to the child it is a wrongful injury that does not admit of being justified by any argument, and in running counter to all principles of physiology and education, it is a sin against society."

Such detention, moreover, is often resorted to, to the great injury of pupils, not as a punishment, but in the haste to push children from a lower to a higher grade. Instances of this kind have been reported to us where children from seven to ten years old have been detained on an average more than two hours daily for weeks in succession. In such cases there is, of course, in combination with the evil of prolonged hours in the school room, those of artificial stimulus to study and this leads us to the brief consideration of

ANOTHER EVIL,

which, it is feared, is of growing tendency in nearly all departments of our schools, *i. e.*, the extent to which the system of honors, prizes and markings, the last-named most especially, has been carried in the effort to lift the supposed dull students to the level of those of the brightest capacity. In this, all healthful limits of individual ability have frequently been exceeded; the stimulus excites those who need repression, and fails to affect those who are supposed to need its influence. For such unwise stimulation we believe teachers to be almost wholly responsible, and we believe also that the study of physiology, and a better knowledge of the mental hygiene of childhood, would be the best correctives.

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EXTERNAL HEALTH CONDITIONS.

States and communities having a more vital interest in the physical perfection than they can have in the mental culture of their children and youth, we have the right to expect that, in the home which public authority provides as the place in which they are to be congregated through the most important years of life, we shall find the health conditions to be all that the most painstaking care can make them. Knowing that mind and body are interdependent parts of one organism we have the further right to expect in the place where the one is to be trained and disciplined, all that is essential to the right and best development of the other. A careful examination of the actual condition of the average school-room and its surrounding, will, however, rudely dissipate any such expectations; we shall find, indeed, that the sanitary conditions of very many school houses are such as merit the strongest reprobation. I do not at all suppose that Wisconsin school houses are exceptionally bad, but the practical question is one of actual condition, not of comparison.

We find many buildings which have been constructed at great cost, that present an attractive appearance, and that minister to both local and general pride; but a critical examination of them with reference to their adaptation to the uses for which they have been built, will show defects in a large and wholly unexpected proportion — defects of a character such as seriously to imperil the health of their inmates. Many are badly located, most of them are badly ventilated, and not a few are over-crowded; a very large proportion grievously injure the eye-sight of the children gathered in them, while uncomfortable seats, imperfect janitorship, lack of proper means of heating, filthy outbuildings, and a water supply sometimes unwholesome, sometimes distant, or otherwise inconvenient of access, often wholly wanting, are among the many disagreeable facts that meet us as we enter upon such an examination.

It is not the purpose of this paper to go into details on these points; yet they so aptly illustrate the need that exists for popular instruction in the laws of hygiene, that we cannot forbear to call attention to a few of the most prominent defects. It is perhaps

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impossible in all cases so to locate a dwelling house that it shall be free from proximity to all unhealthful or distracting surroundings; but it is very seldom impossible to secure a desirable and healthy site for a school building, in the location of which there may be a considerable degree of latitude. A reasonable spirit of compromise and above all a just conception of the importance of the matter should be sufficient to secure the choice of the most healthful and beautiful ground that the district has to offer. The convenience of sparsely settled localities can be no excuse for contentment with a site that is low and damp, or that is in the vicinity of unwholesome nuisances and yet schools are found in such situations with surprising and wholly needless frequency.

The popular feeling of many districts appears to be that which is well expressed by a teacher who says in her report: "People seem to think that a place which they would consider too poor for their own houses is good enough for a school." Neither is there any excuse for not having dry and pleasant play-grounds attached to every school house. On this point we quote to commend from the report of a teacher who says: "A school is much easier governed when the surroundings are neat and attractive, and the room clean and generally homelike and comfortable. I have often planted flowers around the school house, and have invariably found that the children took pride in caring for and cultivating them, and *were better scholars for so doing*. The school should be the most attractive and pleasant of places." There is unquestionably sound truth and hygienic education in this cultivation of the æsthetic; but whether it be practicable or not to render the school-house attractive, there can be no excuse whatever for unhealthfulness of construction. The building may be utterly plain as to exterior or interior, but it must not be the cause of disease to its occupants. In the school room, during the developing years of life, more hours are spent than in any other one place, save the room devoted to sleep. Into it are brought, from the many and various homes of its inmates, whatsoever habits of personal uncleanness, or whatsoever elements of contagion are developed in those homes. If we consider that to these there is often added the dangers arising from close contact, from over-crowding, from undrained and

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ilily-ventilated rooms, in which the tainted exhalations from the breaths and bodies of the most uncleanly and the diseased must pass through the lungs of all, we may appreciate to some extent the "perils of the school-room," for which we can look for an adequate remedy save through the general diffusion of that sanitary knowledge which will secure needed reforms in school architecture.

In the good time coming, when such knowledge shall be sufficiently extensive, the people will no longer tolerate a condition of things which they now regard with indifference, but will demand in the school room that purity of air and abundance of air space, which is necessary for the proper maintenance of the most healthful physical life. In that good time, moreover, they will tolerate no such display of ignorance of the principles of ventilation as that manifested in rooms that exist in this state, where handsomely decorated registers lead into flues wholly closed at the top, or where a tube three inches square is provided for the ventilation of a room containing seventy-five pupils!

Another evil of startling magnitude in school life is found in

THE EXTENT TO WHICH EYESIGHT IS SUFFERING.

The growing prevalence of eye diseases among students has within the last ten years attracted much attention both in this country and abroad. The general conclusion reached, after careful examination of the eyes of more than twenty thousand children is, that imperfect light, and light which comes to the eye from trying positions, especially when combined with close application to study, prolonged and strained attention to near and minute objects, are the chief factors in producing these diseases. A lady of intelligence remarked in the presence of the writer not long since, that one-half of all the students in a certain school for advanced instruction which she had formerly attended, were suffering from some form of eye disease, and that many of them were compelled to modify their courses of study in consequence thereof; examination of the reports already referred to has been carried to the point of finding two hundred and fifty schools which report that the eyesight of some of the pupils engaged in them is suffering, this number being a little more than one-third of all of the reports examined

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on this point, while the same reports often contain a probable explanation of the causes in some combination of unsanitary conditions, notably in the blinding glare which falls upon the eyes of pupils while engaged in study, or yet more often, in blackboard exercises. Dr. Loring, an excellent authority in such matters, says: "My belief is, that the amount of school work consistent with a healthy condition of the eyes, has not only reached its farthest possible limit, but in many places far exceeds it." This is a subject which demands the careful attention of educators and school architects, and furnishes another excellent illustration of the existing necessity for the comprehension and practical application of hygienic laws on the part of all who have to do with school life.

EDUCATION SHOULD BE PRACTICAL.

In view of all that has been said, it may be asked if we hold that educational processes may be carried too far. We have made no such assertion, nor is loyalty to and the sincerest love for the common school, "the crowning glory of the age," inconsistent with calling attention to its defects. It is not to the aggregate of work sought to be done, or the fact that higher branches of knowledge are taught in our public schools, that these suggestions are directed. *If there be time* for the pursuit of all these studies, they are right and desirable; but it has appeared to the writer that such unwise attempts are being made to cram children of immature years with these higher branches of education, as cannot fail to be productive of evil results; that the practice of some and the tendency of many schools is to demand from children of ten, twelve or fourteen years, as many if not more hours of mental work than it is prudent to allow to children or youth of any age. It is entirely true that the necessities of parents often terminate the pupilage of children at an earlier age than is consistent with the completion of the school curriculum, if not thus hurried through; but it is not true that education ceases with attendance at school. If the physical system be unimpaired, and the child has the acquirements described by Mr. Everett as constituting an excellent education, *if he has been taught to think* rather than to memorize, the school has given him a most excellent foundation, and has done all that it

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is needful to do for any one to enable him to reach any height to which ambition may lead. If, on the contrary, the foundations of physical and mental health have been impaired, all that comes afterward is imperilled.

The highest and best requirements of the whole system demands the equal and co-ordinate development of body and mind. School life may, and should be such as will secure this result, so that as maturity approaches, increasingly heavy burdens may be borne without injury; but the brain, which is the last organ to arrive at maturity, cannot, with impunity, be too hardly pushed while in a plastic state.

The education that a child obtains in school has two chief objects: 1st. The acquirement of knowledge. 2d. The acquirement of mental discipline by study, by which he is enabled to digest what is obtained elsewhere. Very much of the study and memorizing of lessons in the school-room is for the latter purpose, the things learned having in themselves so slight a bearing on anything that is practical either to the child or in future life, that they are speedily forgotten when once the school is left behind. There is coming to be a wide spread belief that there should be more of practical instruction in the education that is given to our children, and that some of the weary years that early childhood spends in the study of impractical things, may be better utilized.

The London Times, in speaking of the prominence given to mere memorizing, says that to teach children "something about gravitation, atmospheric pressure, the effects of temperature and other simple matters of like kind, which would admit of experimental illustration, and call upon the learner for statements in his own words instead of those of somebody else, would be so many steps toward real mental development." It is claimed for physiology and hygiene that they stand forth prominently among the practical things commended, and that, involving as they do, the study of other sciences, they may, while storing the mind with useful knowledge, be made a valuable means of mental discipline. It is on this ground that we urge that they be given a prominent place in the public school curriculum to the exclusion, if need be, of less useful studies. That there may be practical difficulty in doing this is

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fully appreciated, but the immense importance that attaches to rightful instruction in these matters, gives value to every intelligent effort in this direction. No real difficulty in making physiological studies interesting and attractive is inherent in the subject. If the teacher be thoroughly interested in them they may be made attractive even to the youngest pupils. It is of happy augury that simple practical treatises and familiar lectures upon these subjects, adapted to the comprehension and needs of school children, are being multiplied in this and other countries.

Says Herbert Spencer: "We assert that such a course of Physiology as is needful for the comprehension of its general truths and their bearings, is an essential part of a rational education. Strange that such an assertion should need making! Stranger still that it should need defending! Yet, men who would resent as an insult any imputation of ignorance respecting the fabled labors of a fabled demi god, show not the slightest shame in confessing that they do not know where the eustachian tubes are, what is the normal rate of pulsation, or how the lungs are inflated. So terrible in our education does the ornamental override the useful, that while the great bulk of what is acquired has no bearing on industrial necessities, an immensity of information that has a direct bearing on them is passed over."

To incorporate these practical things into our public school teaching, is worth the most strenuous and persistent efforts. As preparatory thereto, careful examinations in Physiology and Hygiene should be required of all who seek certificates as teachers, and an important place in oral instruction, general exercises, and object lessons should be assigned to them, in schools even of the lowest grade. It is not enough in any grade, that the teaching of these branches be confined to routine question and answer, from which they are liable to degenerate into the merely dogmatic, in which it is almost impossible for a child to become intelligently interested. The teaching should be, must be, vitalized made personal, and of direct application to daily and hourly life.

TEACHERS SHOULD BE SANITARY STUDENTS.

"It is not expected that all teachers will be physicians," says the editor of the Popular Science Monthly, "but it is a part, and a

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most essential part, of their business to inform themselves with some thoroughness in regard to the mechanism, normal workings, laws of endurance and morbid indications of the nervous system. They should read so widely and carefully upon this subject as to induce caution, and not to become the heedless instruments of an inexorable policy that takes no account of physiological circumstances, hereditary defects, abnormal temperaments, constitutional dullness or precocity, and various other conditions which ought often to qualify school room management." Neither do we urge or expect that teachers shall become expert sanitarians, but we do urge that they be *students of sanitary science*, and that they seek to exemplify its teachings in every school over which they may be placed.

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moreover, sadly needs remodelling; and here also the teacher can render good and effective service. Let him persistently impress the importance of this matter upon school officers, and upon the fathers and mothers of the children placed in his care, and the old buildings, which in time must be abandoned, will be replaced by those which will show that the lessons have not been unheeded.

It would be well if plans for school buildings, drawn with special reference to the health requirements of those who are to occupy them, approved by competent authority, and adapted to the needs and pecuniary abilities of differing localities, should be furnished by the state superintendent to all applicants without cost; and if the same authority which makes attendance on school compulsory should declare, under forfeiture of state funds, that no school building should hereafter be erected and occupied that did not, in all essential respects, conform thereto, another desirable step would be taken.*

Meanwhile, the teacher who "knows that foul air in the school-room is as truly filth as though its "aerial nastiness" were visible, that the rebreathing of air that has once passed through the lungs,

* The Plumber and Sanitary Engineer has recently offered a prize of \$500 for the four best designs for a model school-house in a sanitary aspect, and adapted to the needs of a large school. If a similar prize was offered for designs for a school-house adapted to the wants of country and village schools, it would doubtless develop some good results.

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poisons the body and stupefies the brain; that an imperfectly lighted room or a blinding glare of light in the eyes produces disease of those organs; that improper arrangement of seats and desks brings not only immediate discomfort to the pupil, but leads to special permanent deformities, may, by his influence, his importunity and his own personal labor, bring many improvements into the old building, and do much toward making it more tolerable while it must last.

One of the most general and most dangerous defects of existing school buildings is that of imperfect ventilation; but, in the great majority of cases, some way may be found partially to remedy the evil without introducing cold blasts of air that "slay like a sword." There are certain kinds of stoves that do good service in ventilating rooms in which they are placed, being so constructed as to use up the foul air of the apartment in the process of combustion, and supply its place with pure, warmed air from without. A due appreciation of the importance of purity of air may make it possible to devise some way in which the old stove may be exchanged for one of these. If this be not practicable, some simple and inexpensive device for removing foul or introducing pure air may be applied.*

In short, if the teacher be thoroughly alive to the matter there are many ways of improving the old building, every one of which is an object lesson of direct educational value to the pupils who study

* Among these may be mentioned one, the credit of which is due to Mr. W. J. Langson, secretary to the chamber of commerce in the city of Milwaukee, in whose rooms it was first seen by the writer. It consists simply, in the introduction into the horizontal part of an ordinary stove pipe, of a "T" joint, the vertical arm of which is extended to within a few inches of the floor; this constitutes a foul air flue, and very materially assists in the purification of the atmosphere in the room. It should be furnished with a snugly fitting damper, which may be wholly or partially closed should there be any interference with the draught of the stove. This device is noticed and commended by Dr. Hewitt, secretary of the State Board of Health, of Minnesota, in the fifth annual report of that board. Alone, so far as its capacity permits, it will do excellent service, but if, in addition, we employ some means of introducing, without draught, a supply of pure air, we shall have all the principles of a perfect ventilation. This can be done to a considerable extent by banking the house with clean earth, closing up as far as possible all crevices, and leading into the room an air trunk which shall deliver fresh air under the stove. A properly arranged metal jacket surrounding the stove will be a valuable addition. If this arrangement be impracticable, air may be introduced as often advised by raising one of the lower sashes a few inches and placing a well-fitting board in the opening thus formed, fresh air entering between the sashes

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in it. "Cleanliness, which is akin to Godliness," exhibited and commended in the school room and in all the surroundings of the school house, will in time find itself reflected in many another home. Not only cleanliness but cheerfulness and beauty have direct educational power in themselves. Let, then, the too frequent bareness and blankness of the school-room walls give way to inexpensive, if need be, but tasteful adornment. Mottoes, pictures, flowers within, trees and flowers and vines without, are not distracting but elevating in their influences, and in the work of providing and caring for them, the children will be willing, enthusiastic helpers—receiving the while wholesome physical culture and sound sanitary and æsthetic instruction, the harvest from which is to be gathered in later years.

THE TEACHER'S WORK.

If it be asked whether these changes, if made, would increase the teacher's work, we answer nay. Upon some they would have but little effect, for "if the teacher be incompetent, indifferent or unfaithful, no degree of perfection in school appointments or excellence in text books or plans can redeem the school from substantial if not utter failure."*

Upon the great body of teachers, who we believe are imbued with the spirit of their calling and faithful to its demands, we would willingly lay not the slightest additional burden. The ceaseless round of work which already falls to their lot, robs them of many a hour that should be devoted to rest and sleep, and the frequency with which they falter and fall out of the ranks attests the severity of their present labor. Rather would we seek to make their profession so attractive that for very love of it those who enter its honored ranks might desire to remain there. We believe that with a better appreciation of physiological and hygienic laws, there would come such reforms in the methods of teaching and such care for the sanitary construction of school buildings as while in every way benefitting the scholars, would as truly benefit the teachers also; would lighten rather than increase their burdens, and contribute to the permanence of the relation between them and their pupils.

* Stark.

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Appreciating what teachers have done and are doing, we may adopt the language of Dr. Hutchings and say: "For what there is of excellence in educational processes, credit is to be given without stint or reservation to the educators; what is deficient, incomplete, injudicious or harmful is not so much to be passed to the account of the educators as to the thoughtlessness, lack of discrimination, unwise ambition and avoidance of responsibility on the part of parents. The teacher, by the very exercise of his vocation, has always been in advance of public sentiment, and, chafing under restraint, has never been permitted to act up to the full limit of his experience. No more earnest, patient, sacrificing, absorbed, enthusiastic and intelligent workers gather around any labor than those who wait on the ministry of teaching." *

THE ENCOURAGEMENT.

In what rests the hope that the things herein shadowed will find practical recognition in the school room? Clearly some of the changes suggested must come, if at all, through a popular appreciation of the relations of health to education, and through such public sentiment as will demand the modification of existing school conditions. The public school exists *for* the children of the state, and while the law sanctions their admission thereto at the age of four years, neither teacher nor school officer can deny them entrance, whatever their convictions. And in the great world of demand and supply teachers will ever be found to meet, in so far as is possible, the requirements of parents concerning hours and courses of study, whether wise or unwise. The problem then involves the instruction of both teachers and parents in the physiological needs and requirements of children; for this the sanitarian who sees its need, must sedulously labor.

But there is much to give us courage. In the great awakening in all that pertains to the laws of healthful living, which has pervaded the country for the last few years, Wisconsin has not been slumbering, and her teachers and people have shared in the progress. In the suggestions made to us by many teachers and county superintendents, we have pleasing evidence of this fact, and the

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frequency with which some phase of school hygiene is introduced into teachers' institutes, the avidity displayed by them for lectures on school sanitation, and the numerous discussions of the same subject in the *Journal of Education*, all testify to the same desirable state of things. Special mention should also be made of the State Superintendent, who has shown a warm interest in all that pertains to the health and health surroundings of the army of school children under his supervision, and who by his official influence has contributed in many ways to the awakening of public interest in school sanitation.

We may also look hopefully to the normal schools of the state from whence our supply of teachers is largely to be derived. Into these institutions are annually gathered nearly one thousand students, whose avowed purpose is to engage in the work of teaching; we may reasonably look for a greater degree of permanence in this work from them than from those who make the vocation only a stepping stone to other professions; hence it is with peculiar pleasure that we learn from the several presidents of these schools, in response to letters of inquiry addressed to them, that the studies of physiology and hygiene are given increasingly prominent places in them, and that the instruction given in some, if not in all, has special reference to future work to be done in the school room.

"The course of study indicated in our catalogue," says one of these gentlemen, "is only an outline and gives a very imperfect idea of our work; a constant effort is being made to impress students with general and specific right living as a personal question in their own domestic habits, in sleep, diet, ablution, physical exercise, study and recreation, by general regulation and by specific caution given to individual students." Such are precisely the lessons which we hope will be inculcated by these students in the schools which they are to hereafter govern, and from which we may confidently expect great and good results.

Through all these channels, and through the active co-operation of many who are welcome workers in the great field of school hygiene, we may hope for such extension of sanitary knowledge among the people as will secure careful investigation of all the environments of school life, and out of all we may confidently hope

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that the problems of health and education will receive such a solution as will bring with it a settled conviction that the highest attainments of one is not incompatible with the highest perfection of the other, but is rather dependent thereupon.

CONCLUSION.

It has not been forgotten in preparing this paper that there are very many unhygienic influences other than those of the school room, or of methods of study to which children are subjected during the years of school life—that there are homes where every principle of hygienic living is violated—that there are parents and guardians who ignorantly or purposely subject the health of their young charges to the risk of utter ruin, physical, mental and moral. We would by no means be guilty of charging upon school life what is justly chargeable to home life or street life, but we would enter a plea that the public school in so far as it can, may be made the instrument of bearing to these homes lessons in education, in health and in virtue—a three fold cord which shall *forever* bind the hearts of the people unto itself.

